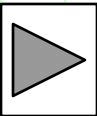


The Periodic Table and Bonding




Physical Science
DSHS



The Periodic Table and Bonding

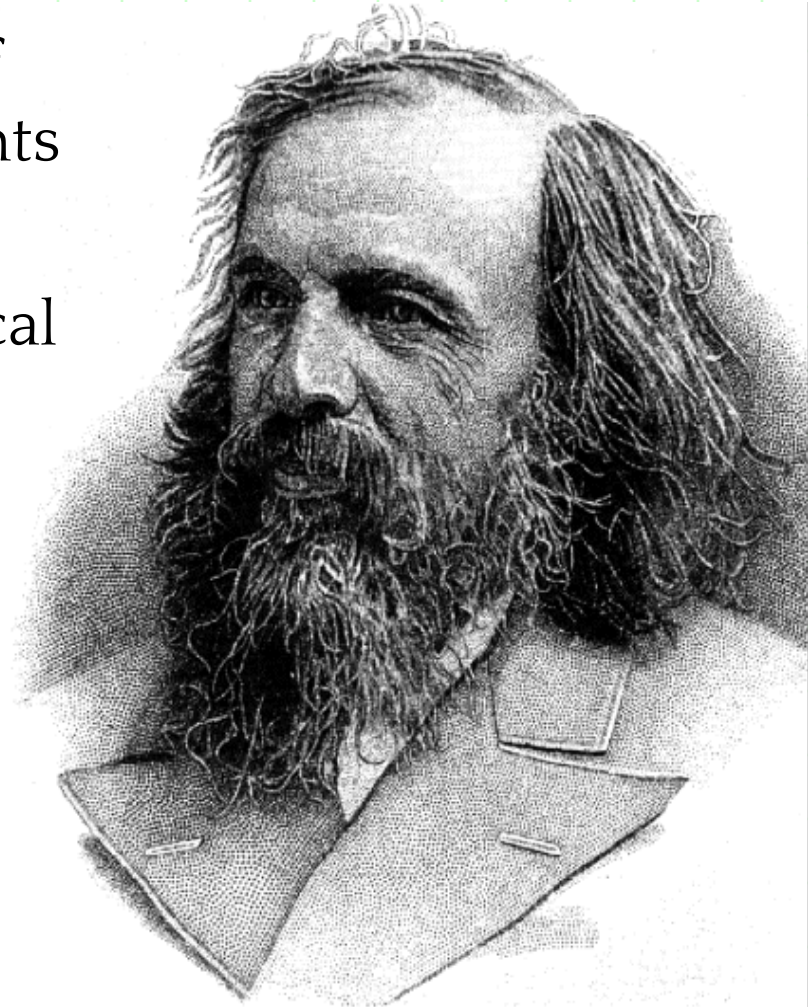
I. The Periodic table: an organization of the elements based on similar properties and reactivities

	1 IA																	18 VIIIA	
1	1 H 1.00797	2 IIA	Periodic Table										13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA	2 He 4.0026	
2	3 Li 6.939	4 Be 9.0122											5 B 10.811	6 C 12.0112	7 N 14.0067	8 O 15.9994	9 F 18.9984	10 Ne 20.179	
3	11 Na 22.9898	12 Mg 24.305	3 IIIB	4 IVB	5 VB	6 VIB	7 VIIB	8	9 VIII	10	11 IB	12 IIB	13 Al 26.9815	14 Si 28.086	15 P 30.9738	16 S 32.064	17 Cl 35.453	18 Ar 39.948	
4	19 K 39.102	20 Ca 40.08	21 Sc 44.956	22 Ti 47.90	23 V 50.942	24 Cr 51.996	25 Mn 54.9380	26 Fe 55.847	27 Co 58.9332	28 Ni 58.71	29 Cu 63.54	30 Zn 65.37	31 Ga 65.37	32 Ge 72.59	33 As 74.9216	34 Se 78.96	35 Br 79.909	36 Kr 83.80	
5	37 Rb 85.47	38 Sr 87.62	39 Y 88.905	40 Zr 91.22	41 Nb 92.906	42 Mo 95.94	43 Tc [99]	44 Ru 101.07	45 Rh 102.905	46 Pd 106.4	47 Ag 107.870	48 Cd 112.40	49 In 114.82	50 Sn 118.69	51 Sb 121.75	52 Te 127.60	53 I 126.904	54 Xe 131.30	
6	55 Cs 132.905	56 Ba 137.34	57 La 138.91	72 Hf 178.49	73 Ta 180.948	74 W 183.85	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.09	79 Au 196.967	80 Hg 200.59	81 Tl 204.37	82 Pb 207.19	83 Bi 208.980	84 Po [210]	85 At [210]	86 Rn [222]	
7		88 Ra [226]	89 Ac [227]	104 Ku [260]	105	106	107	108	109										
2								33 Periodic Table											9.17.00 1:37 PM

Dmitri Mendeleev (1869)

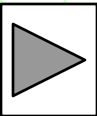
Was a Russian chemist who published the first periodic table of the elements by placing the elements in order of increasing atomic mass.

Started a new row any time chemical properties repeated so that each column had similar chemical properties



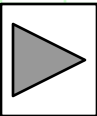
Dmitri Mendeleev.

Row	Group I — R ₂ O	Group II — RO	Group III — R ₂ O ₃	Group IV RH ₄ RO ₂	Group V RH ₃ R ₂ O ₃	Group VI RH ₂ RO ₃	Group VII RH R ₂ O ₇	Group VIII — RO ₄
1	H = 1							
2	Li = 7	Be = 9.4	B = 11	C = 12	N = 14	O = 16	F = 19	
3	Na = 23	Mg = 24	Al = 27.3	Si = 28	P = 31	S = 32	Cl = 35.5	
4	K = 39	Ca = 40	— = 44	Ti = 48	V = 51	Cr = 52	Mn = 55	Fe = 56, Co = 59, Ni = 59, Cu = 63
5	(Cu = 63)	Zn = 65	— = 68	— = 72	As = 75	Se = 78	Br = 80	
6	Rb = 85	Sr = 87	?Yt = 88	Zr = 90	Nb = 94	Mo = 96	— = 100	Ru = 104, Rh = 104, Pd = 106, Ag = 108
7	(Ag = 108)	Cd = 112	In = 113	Sn = 118	Sb = 122	Te = 125	I = 127	
8	Cs = 133	Ba = 137	?Di = 138	?Ce = 140				
9								
10			?Er = 178	?La = 180	Ta = 182	W = 184		Os = 195, Ir = 197, Pt = 198, Au = 199
11	(Au = 199)	Hg = 200	Tl = 204	Pb = 207	Bi = 208			
12				Th = 231		U = 240		



Sec 4-0

Row	Group I — R_2O	Group II — RO	Group III — R_2O_3	Group IV RH_4 RO_2	Group V RH_3 R_2O_5	Group VI RH_2 RO_3	Group VII RH R_2O_7	Group VIII — RO_4
1	H = 1							
2	Li = 7	Be = 9.4	B = 11	C = 12	N = 14	O = 16	F = 19	
3	Na = 23	Mg = 24	Al = 27.3	Si = 28	P = 31	S = 32	Cl = 35.5	
4	K = 39	Ca = 40	— = 44	Ti = 48	V = 51	Cr = 52	Mn = 55	Fe = 56, Co = 59, Ni = 59, Cu = 63
5	(Cu = 63)	Zn = 65	— = 68	— = 72	As = 75	Se = 78	Br = 80	
6	Rb = 85	Sr = 87	?Yt = 88	Zr = 90	Nb = 94	Mo = 96	— = 100	Ru = 104, Rh = 104, Pd = 106, Ag = 108
7	(Ag = 108)	Cd = 112	In = 113	Sn = 118	Sb = 122	Te = 125	I = 127	
8	Cs = 133	Ba = 137	?Di = 138	?Ce = 140				
9								
10			?Er = 178	?La = 180	Ta = 182	W = 184		Os = 195, Ir = 197, Pt = 198, Au = 199
11	(Au = 199)	Hg = 200	Tl = 204	Pb = 207	Bi = 208			
12				Th = 231		U = 240		



Mendeleev

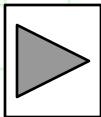
Left gaps in his list of elements to show where there was no known element to fit the pattern

First to use the periodic table to make predictions

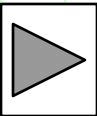
Not all elements fit the pattern

Mendeleev's Periodic Table of 1869¹

H 1			Ti 50	Zr 90	? 100
			V 51	Nb 94	Ta 182
			Cr 52	Mo 96	W 186
			Mn 55	Rh 104.4	Pt 197.4
			Fe 56	Ru 104.4	Ir 198
			Ni, Co 59	Pd 106.6	Os 199
			Cu 63.4	Ag 108	Hg 200
			Zn 65.2	Cd 112	
	Be 9.4	Mg 24	? 68	U 116	Au 197?
	B 11	Al 27.4	? 70	Sn 118	
	C 12	Si 28	As 75	Sb 122	Bi 210?
	N 14	P 31	Se 79.4	Te 128?	
	O 16	S 32	Br 80	I 127	
	F 19	Cl 35.5	Rb 85.4	Cs 133	
Li 7	Na 23	K 39	Sr 87.6	Ba 137	Tl 204
		Ca 40	Ce 92		Pb 207
		? 45	La 94		
		Er? 56	Di 95		
		Yt? 60	Th 118?		
		In 75.6?			



Mendeleev

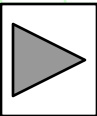


Henry Mosely

English chemist

Organized the periodic table by increasing atomic number

Modern periodic table also organizes elements by increasing atomic number

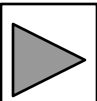


The Periodic Table and Bonding

- B. The Periodic Table has gone through many changes through the years.

1 H																	2 He				
3 Li	4 Be															5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg															13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr				
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe				
55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn				
87 Fr	88 Ra	89 Ac	104 Rf	105 Ha	106 Sg	107 Ns	108 Hs	109 Mt	110 Uun												

58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr



ПЕРИОДИЧЕСКАЯ СИСТЕМА ЭЛЕМЕНТОВ
 Д.И. МЕНДЕЛЕЕВА

The image shows a standard periodic table of elements, titled "ПЕРИОДИЧЕСКАЯ СИСТЕМА ЭЛЕМЕНТОВ Д.И.МЕНДЕЛЕЕВА" (Periodic System of Elements D.I. Mendeleev). The table is organized into rows (periods) and columns (groups). Elements are color-coded: red for alkali metals, blue for alkaline earth metals, green for transition metals, and orange for non-metals. The table includes element symbols, atomic numbers, and names in Russian. A portrait of Dmitri Mendeleev is in the top right corner.



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Period

Main Group

Noble Gases

	IA 1	IIA 2	IIIA 13	IVA 14	VA 15	VIA 16	VIIA 17	VIIIA 18
1	1 Hydrogen H 1.0079						1 Hydrogen H 1.0079	2 Helium He 4.0026
2	3 Lithium Li 6.941	4 Beryllium Be 9.0122	5 Boron B 10.811	6 Carbon C 12.0112	7 Nitrogen N 14.0067	8 Oxygen O 15.9994	9 Fluorine F 18.9984	10 Neon Ne 20.179
3	11 Sodium Na 22.989	12 Magnesium Mg 24.305	13 Aluminum Al 26.9815	14 Silicon Si 28.086	15 Phosphorus P 30.9738	16 Sulfur S 32.064	17 Chlorine Cl 35.453	18 Argon Ar 39.948
4	19 Potassium K 39.098	20 Calcium Ca 40.08	31 Gallium Ga 69.723	32 Germanium Ge 72.59	33 Arsenic As 74.922	34 Selenium Se 78.96	35 Bromine Br 79.904	36 Krypton Kr 83.80
5	37 Rubidium Rb 85.468	38 Strontium Sr 87.62	49 Indium In 114.82	50 Tin Sn 118.69	51 Antimony Sb 121.75	52 Tellurium Te 127.60	53 Iodine I 126.904	54 Xenon Xe 131.30
6	55 Cesium Cs 132.905	56 Barium Ba 137.34	81 Thallium Tl 204.37	82 Lead Pb 207.19	83 Bismuth Bi 208.980	84 Polonium Po (209)	85 Astatine At 210*	86 Radon Rn 222*
7	87 Francium Fr 223*	88 Radium Ra 226**						

Key

1
Hydrogen
H
1.0079

Atomic number
Name
Symbol
Atomic weight

Color Key

Metal

Nonmetal

Noble Gases

Transition Elements

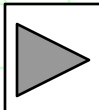
	IIIB 3	IVB 4	VB 5	VIB 6	VII B 7	VIII B 8	VIII B 9	VIII B 10	IB 11	IIB 12
4	21 Scandium Sc 44.956	22 Titanium Ti 47.90	23 Vanadium V 50.942	24 Chromium Cr 51.996	25 Manganese Mn 54.938	26 Iron Fe 55.847	27 Cobalt Co 58.933	28 Nickel Ni 58.71	29 Copper Cu 63.546	30 Zinc Zn 65.38
5	39 Yttrium Y 88.905	40 Zirconium Zr 91.22	41 Niobium Nb 92.906	42 Molybdenum Mo 95.94	43 Technetium Tc 99**	44 Ruthenium Ru 101.07	45 Rhodium Rh 102.905	46 Palladium Pd 106.4	47 Silver Ag 107.868	48 Cadmium Cd 112.40
6	57 Lanthanum La 138.91	72 Hafnium Hf 178.49	73 Tantalum Ta 180.948	74 Tungsten W 183.85	75 Rhenium Re 186.2	76 Osmium Os 190.2	77 Iridium Ir 192.2	78 Platinum Pt 195.09	79 Gold Au 196.967	80 Mercury Hg 200.59
7	89 Actinium Ac 227*	104 Rutherfordium Rf 261*	105 Hassium Ha 262*	106 Seaborgium Sg (263)	107 Meitnerium Ns 262*	108 Hassium Hs 265*	109 Meitnerium Mt 266*	110	111	112

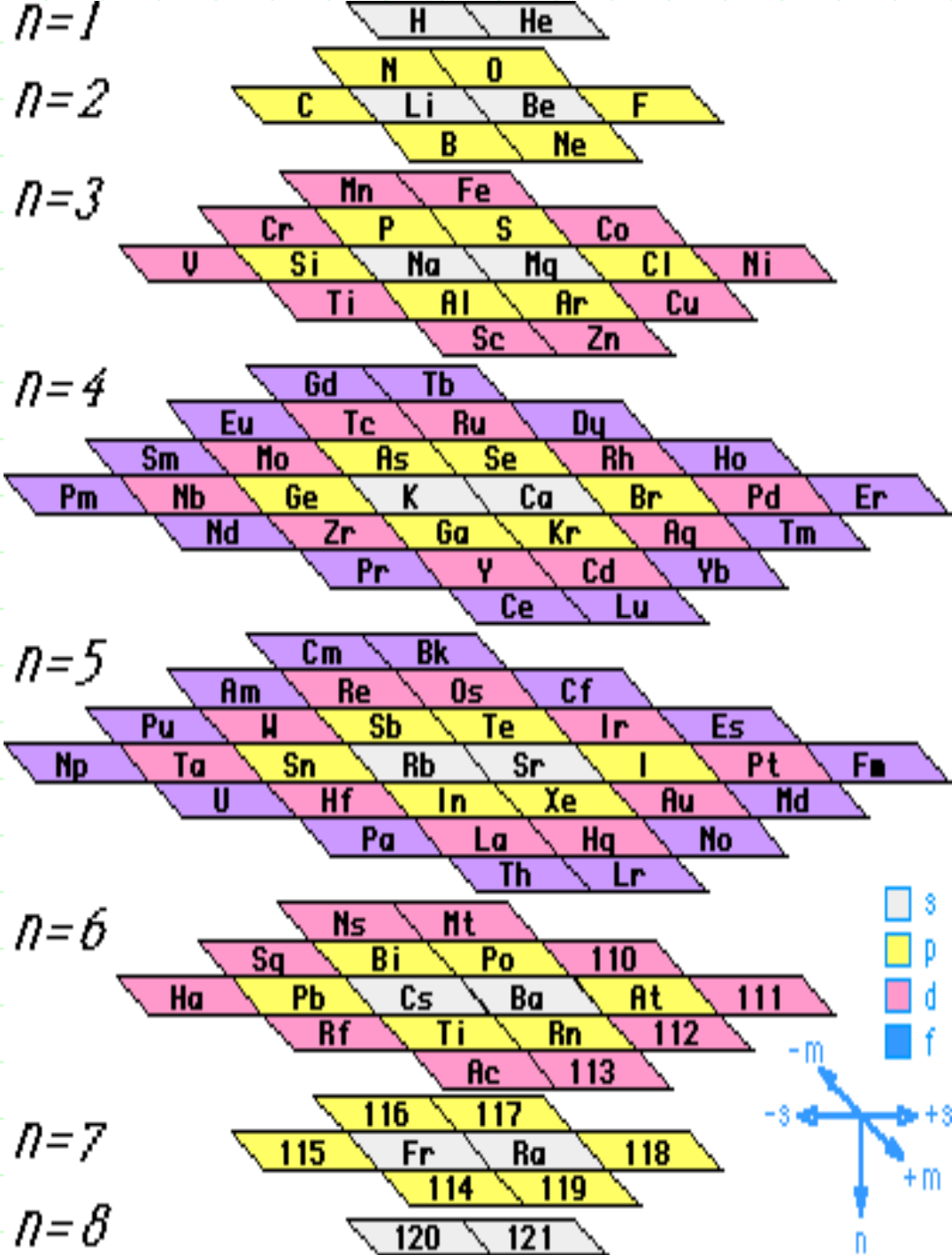
Inner Transition Elements

58 Cerium Ce 140.12	59 Praseodymium Pr 140.907	60 Neodymium Nd 144.24	61 Promethium Pm 147**	62 Samarium Sm 150.35	63 Europium Eu 151.96	64 Gadolinium Gd 157.25	65 Terbium Tb 158.925	66 Dysprosium Dy 162.50	67 Holmium Ho 164.930	68 Erbium Er 167.26	69 Thulium Tm 168.934	70 Ytterbium Yb 173.04	71 Lutetium Lu 174.97
90 Thorium Th 232.038	91 Protactinium Pa 231.04	92 Uranium U 238.03	93 Neptunium Np 237*	94 Plutonium Pu 242**	95 Americium Am 243.06	96 Curium Cm 247*	97 Berkelium Bk 249**	98 Californium Cf 251*	99 Einsteinium Es 254*	100 Fermium Fm 257.095	101 Mendelevium Md 258.10	102 Nobelium No 259.101	103 Lawrencium Lr 260.105

isotope with longest half-life
better known isotope

H He																	
Li Be B C N O F Ne																	
Na Mg Al Si P S Cl Ar																	
K Ca Sc Ti V Cr Mn Fe Co Ni Cu Zn Ga Ge As Se Br Kr																	
Rb Sr Y Zr Nb Mo Tc Ru Rh Pd Ag Cd In Sn Sb Te I Xe																	
Cs Ba La Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu Hf Ta W Re Os Ir Pt Au Hg Tl Pb Bi Po At Rn																	
Fr Ra Ac Th Pa U Np Pu Am Cm Bk Cf Es Fm Md No Lr Rf Ha Sg Nh Hs Mt 110 111 112																	





The Periodic Table and Bonding

II. What information is obtained from the table?

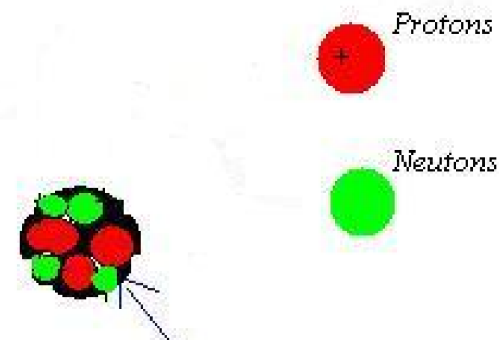
A. Elements arranged by increasing atomic number

4A	5A	6A
<div>6</div> <div>C</div> <div>carbon</div> <div>2.01</div>	<div>7</div> <div>N</div> <div>nitrogen</div> <div>14.01</div>	<div>8</div> <div>O</div> <div>oxygen</div> <div>16.00</div>
14	15	16

The image shows a large grid of 100 squares arranged in a 10x10 pattern. The grid is divided into several sections by gaps. The top section is a 10x10 grid. The middle section is a 10x10 grid. The bottom section is a 10x10 grid. The grid is divided into several sections by gaps.

The Periodic Table and Bonding

1. **This order usually coincides with increasing atomic mass**



Periodic Table of the Elements																	
					Cr			Co	Ni					Ge			
					Mo				Pd	Ag				Sn			

Nucleus

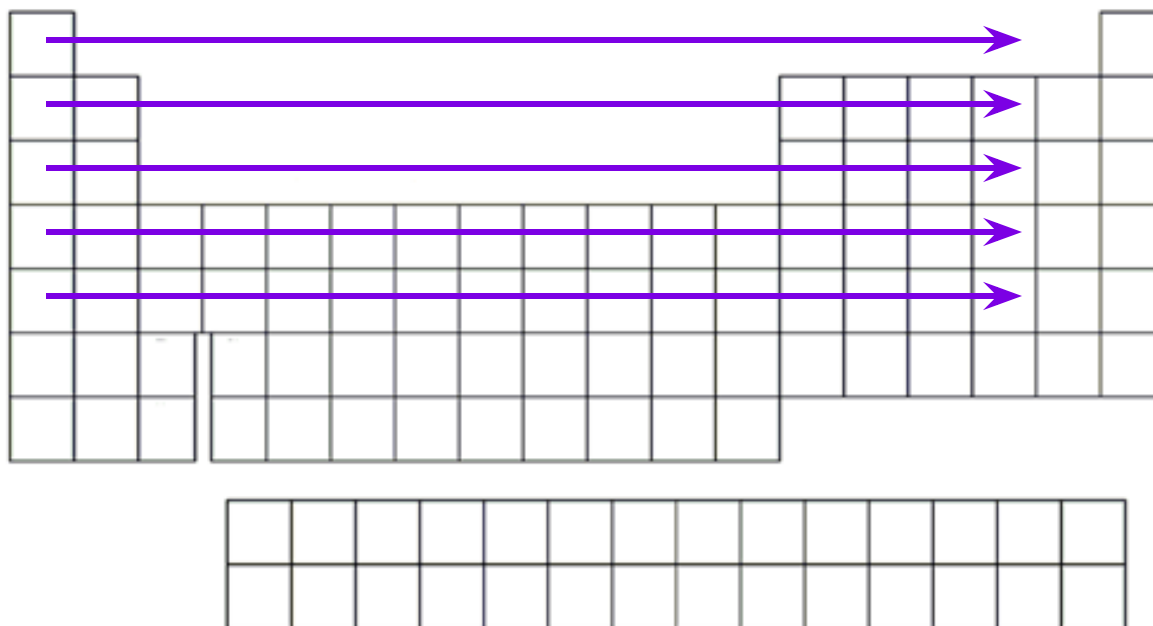


The Periodic Table and Bonding

B. Rows – elements have same number of shells.

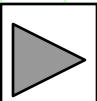
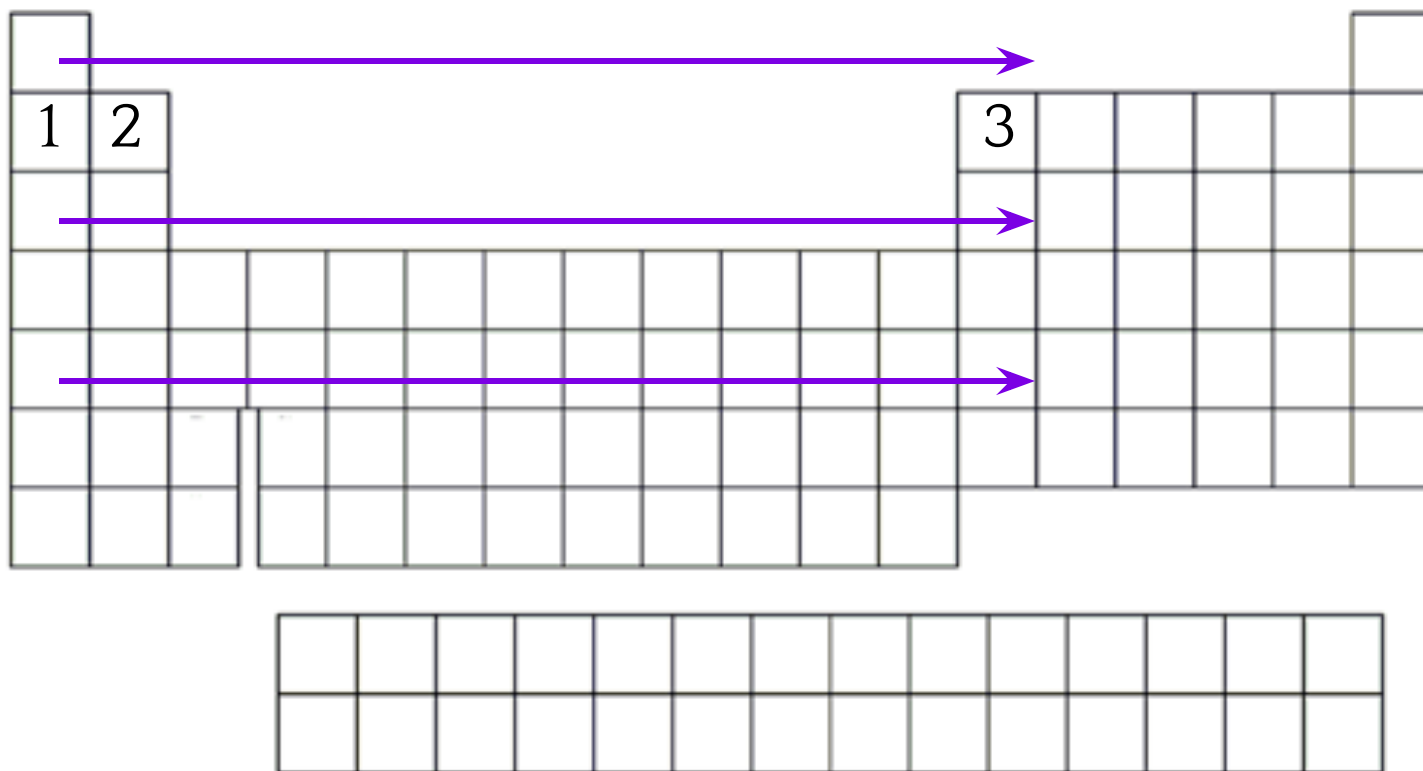
1. The different rows called periods.

a. Period number is shell where valence electrons are found



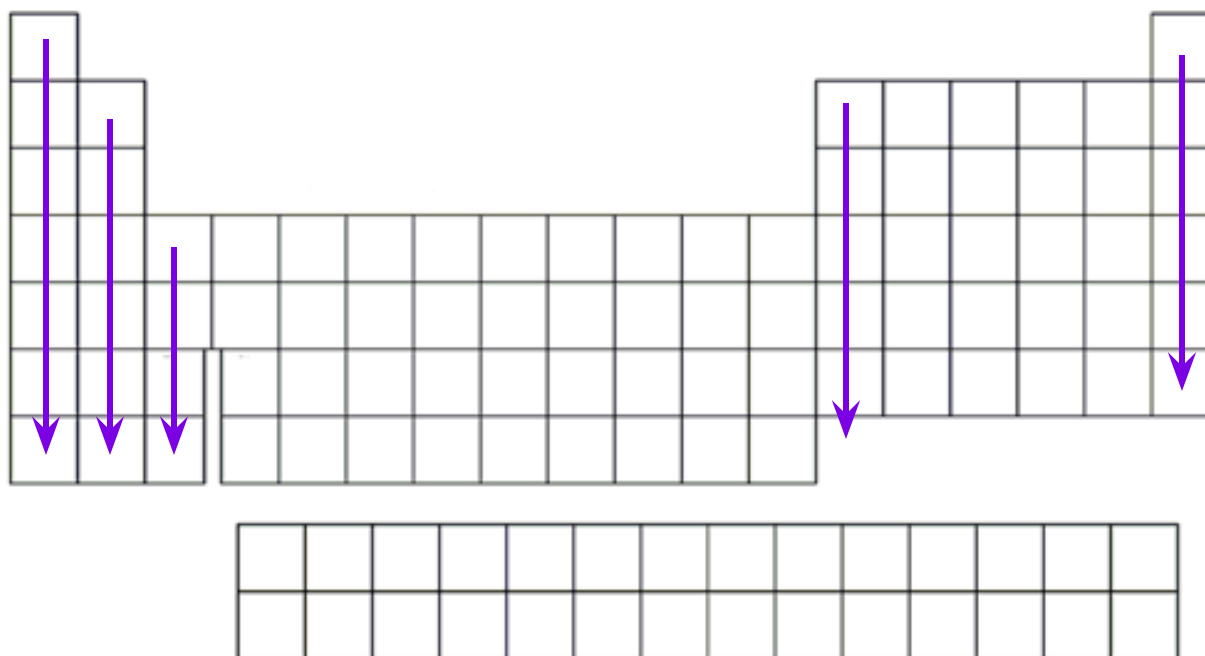
The Periodic Table and Bonding

2. Reactivity of elements decreases going across a period due to the increase in valence electrons

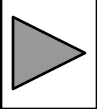


The Periodic Table and Bonding

- C. Columns - elements have same number of valence electrons.
1. Columns are called groups or families
 - a. Elements have similar properties

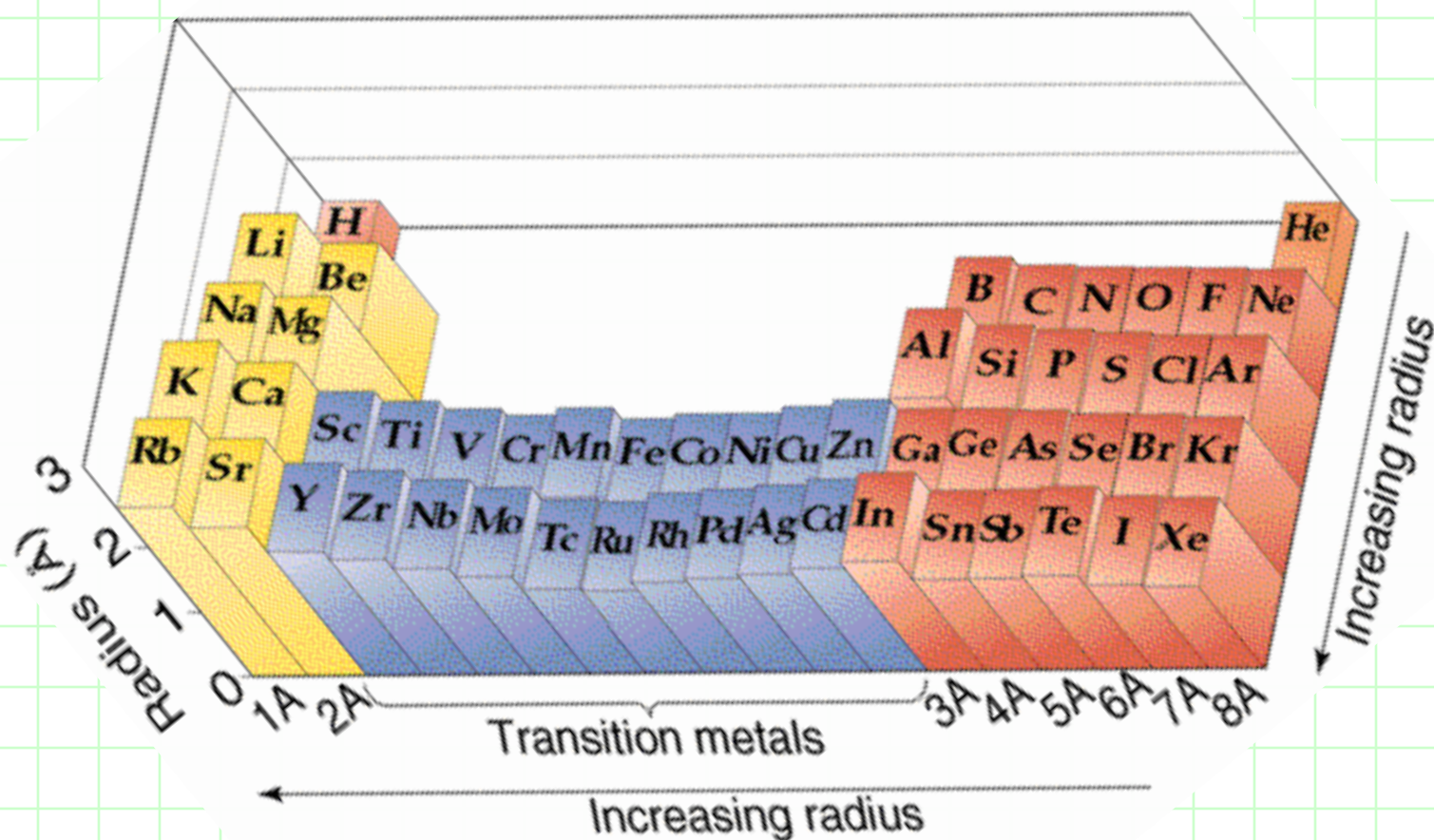


Notable families of the Periodic Table and some important Properties:



The Periodic Table and Bonding

- G. Atomic Radius: Size of an atom increases down a family and decreases across a row



	IA	IIA	IIIA	IVA	VA	VIA	VIIA	VIIIA
Period 1	H							He
Period 2	Li	Be	B	C	N	O	F	Ne
Period 3	Na	Mg	Al	Si	P	S	Cl	Ar
Period 4	K	Ca	Ga	Ge	As	Se	Br	Kr
Period 5	Rb	Sr	In	Sn	Sb	Te	I	Xe
Period 6	Cs	Ba	Tl	Pb	Bi	Po	At	Rn

The Periodic Table and Bonding

The periodic table is color-coded to show major groups of elements:

- Alkali Metals (Group 1):** Yellow
- Alkaline (earth) Metals (Group 2):** Yellow
- Transition Metals (Groups 3-10):** Pink
- Carbon Family (Group 14):** Cyan
- Nitrogen Family (Group 15):** Light Green
- Oxygen Family (Group 16):** Light Green
- Halogens (Group 17):** Light Green
- Noble Gas (Group 18):** Orange

Labels with arrows point to these groups:

- Alkali Metals** (Group 1)
- Alkaline (earth) Metals** (Group 2)
- Carbon Family** (Group 14)
- Nitrogen Family** (Group 15)
- Oxygen Family** (Group 16)
- Halogens** (Group 17)
- Noble Gas** (Group 18)

The periodic table also includes group numbers (1-18) and period numbers (1-7) along the edges.

The Periodic Table and Bonding

- Nonmetals
- Metals
- Metalloids
- Noble gases

The metals, nonmetals, and metalloids

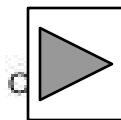
												<div><div></div> Metalloids</div> <div><div></div> Noble gases</div>									
1A 1 H												VIIIA 2 He									
IIA												IIIA 5 B	IVA 6 C	VA 7 N	VIA 8 O	VIIA 9 F	10 Ne				
3 Li	4 Be	The metals, nonmetals, and metalloids										13 Al	14 Si	15 P	16 S	17 Cl	18 Ar				
11 Na	12 Mg	IIIB	IVB	VB	VIB	VIIB	VIIIB			IB	IIB	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr				
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe				
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn				
55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg		114		116		118				
87 Fr	88 Ra	89 Ac	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Uun	111 Uuu	112 Uub										

Rare earth elements

Lanthanides

Actinides

58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr



The Periodic Table and Bonding

F. Physical Properties

1. **Metals** – Left of stair step
2. **Nonmetals** – right of stair step
3. **Metalloids** – on stair step

The diagram illustrates the periodic table with elements color-coded and grouped to show their physical properties. The table is divided into three main regions:

- Metals:** Elements to the left of the stair step, highlighted in pink. A large red oval encloses this entire region.
- Nonmetals:** Elements to the right of the stair step, highlighted in orange. A purple oval encloses this region, with the text "Non metals" written inside.
- Metalloids:** Elements on the stair step, highlighted in cyan. These include Boron (B), Silicon (Si), Germanium (Ge), and Arsenic (As).

The periodic table is labeled with groups (IA through VIIIA) and periods (1 through 6). The word "Metals" is written in large brown letters across the pink region, and "Non metals" is written in blue letters across the orange region.

Important members - the Elements

Individual members of selected Elements & their characteristics

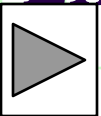
	1 IA	2 IIA												13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA	18 VIIIA
1	H																		He
2	Li														C	N	O	F	
3	Na	Mg	3 IIIB	4 IVB	5 VB	6 VIB	7 VIIB	8	9 VIIB	10	11 IB	12 IIB		Al	Si	P	S	Cl	
4	K	Ca						Fe			Cu	Zn						Br	
5											Ag							I	
6																			
7																			



Metals, Nonmetals, and Semiconductors

Metal – an element that is shiny and can conduct heat and electricity

- Ductile (can be drawn into wires)
- Malleable (easily shaped or formed)
- All the metals (except Hydrogen) are to the left of the table
- Examples include gold, platinum, and copper

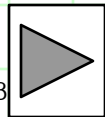


Metals, Nonmetals, and Semiconductors

Nonmetals – an element that conducts heat and electricity poorly (sometimes called insulators)

-often dull and brittle

-examples include oxygen, carbon, and helium

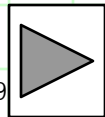


Metals, Nonmetals, and Semiconductors

Semiconductors/Metalloids – share properties with metals and nonmetals

- can conduct electricity under certain conditions

- Boron, Silicon, Germanium, Arsenic, Antimony, Tellurium



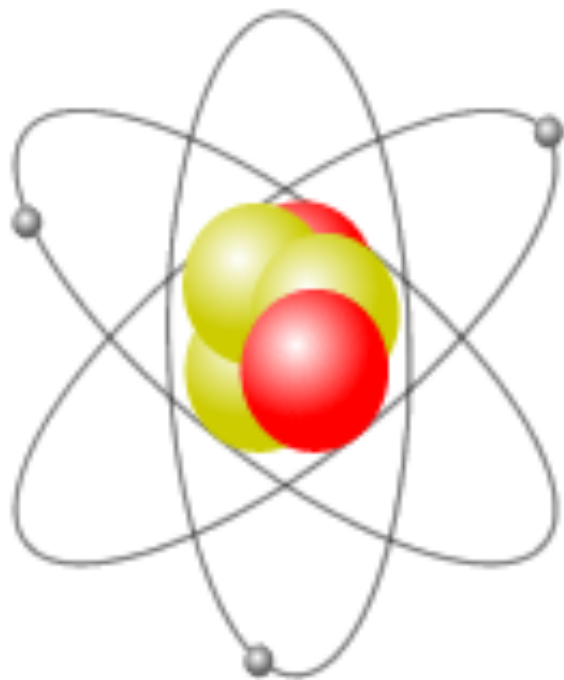
The Periodic Table and Bonding

II. Bonding

A. Ions: Atoms w/ positive or negative charge

1. Anions: (-) ion with a negative charge.

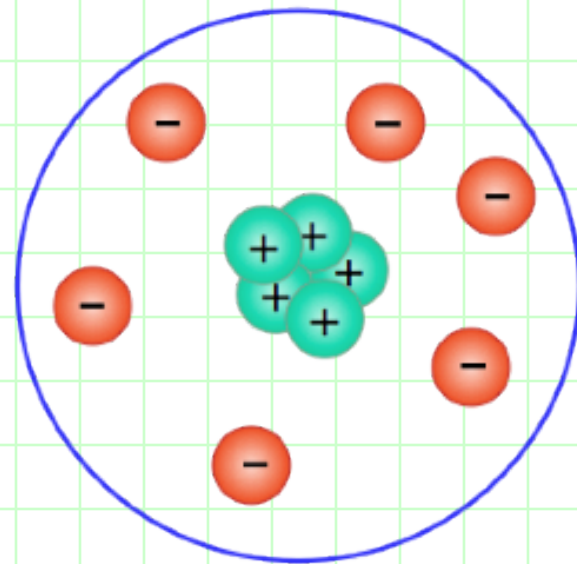
- a. atom w/ more electron(s) than it normally has in stable state!



Negative Ion

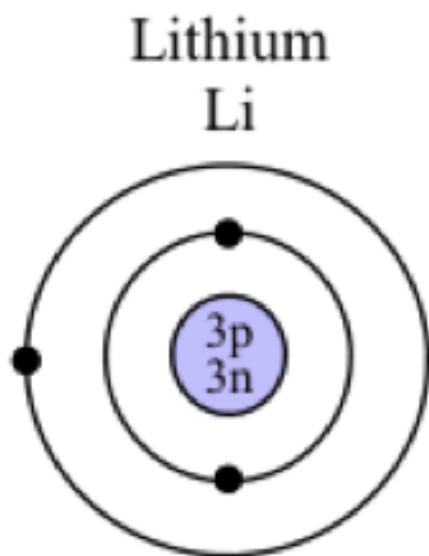
2 Protons

3 Electrons



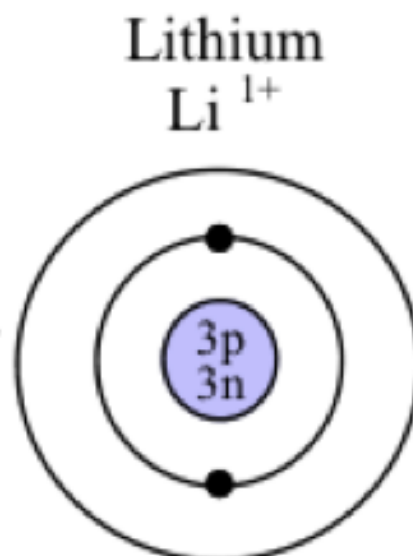
The Periodic Table and Bonding

2. Cations: (+) ion with a positive charge.
a. atom w/ less electron(s) than it normally has in stable state!



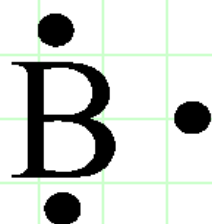
3 protons (+3)
3 electrons (-3)
 $+3 - 3 = 0$
Neutral atom!


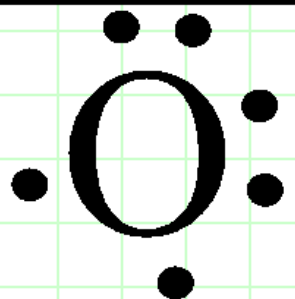
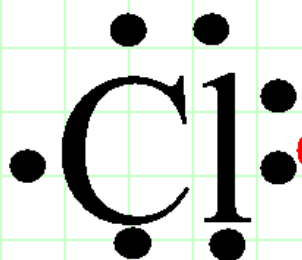
Loses an
electron



3 protons (+3)
2 electrons (-2)
 $+3 - 2 = +1$
positive ion!

Shell





West (South) METALS	Mid-plains METALLOID	East (North) NON-METALS
Alkali Alkaline Transition		Noble gas Halogens Calcogens
These elements tend to give up e⁻ and form CATIONS	These elements will give up e ⁻ or accept e ⁻	These elements tend to accept e⁻ and form ANIONS

West (South) METALS	Mid-plains METALLOID	East (North) NON-METALS
Alkali Alkaline Transition		Noble gas Halogens Calcogens
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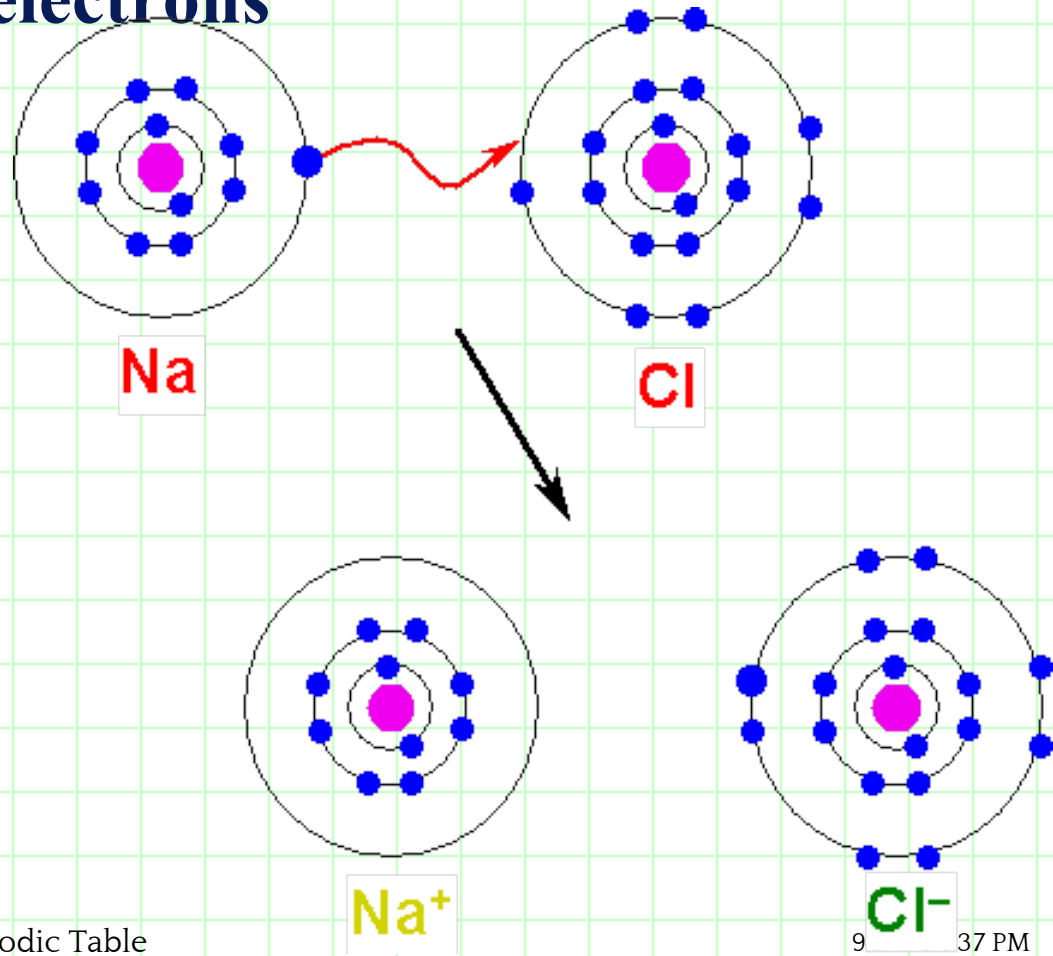
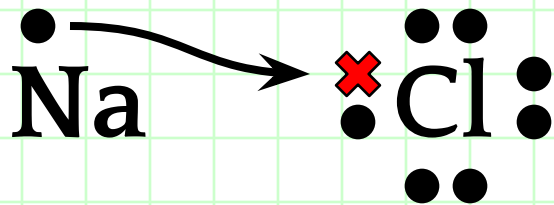
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The Periodic Table and Bonding

C. Ionic Bonding : The bonding of a metal & non – mental.

1. Elements give / take electrons



The Periodic Table and Bonding

2. Ionic bonds typically occur between families 1 & 7, 2 & 6, or 3 & 5

	$\dot{\text{X}}$	Valence electrons						Noble	
1 Ring -->	H	$\dot{\text{X}}\cdot$	$\dot{\text{X}}\cdot$	$\cdot\dot{\text{X}}\cdot$	$\cdot\ddot{\text{X}}\cdot$	$\cdot\ddot{\text{X}}:$	$\cdot\ddot{\text{X}}:$	$\ddot{\text{X}}$	<-- He
2 Rings -->	Li	Be	B	C	N	O	F	$:\ddot{\text{X}}:$	<-- Ne
3 Rings -->	Na	Mg	Al	Si	P	S	Cl	$:\ddot{\text{X}}:$	<-- Ar
4 Rings -->	K	Ca	3	4	5	6	7	8	
	1	2	Valence electrons						

The Periodic Table and Bonding

K

Br

The Periodic Table and Bonding

Li O

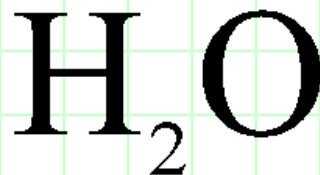
The Periodic Table and Bonding

Mg F

The Periodic Table and Bonding

1. Compound vs Molecule

a. Compound: 2 or more elements combined in fixed proportions



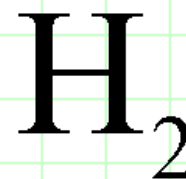
Or



b. Molecule: particle consisting of 2 or more atoms that are bonded together

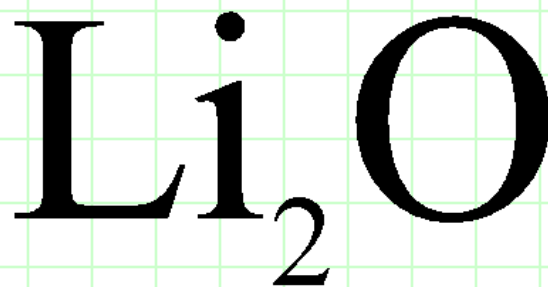
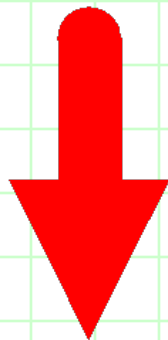
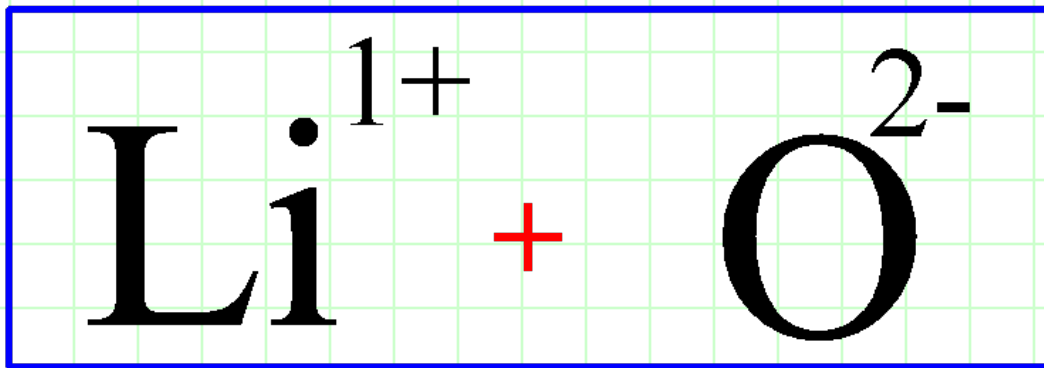


Or



The Periodic Table and Bonding

Ion Criss-Cross



Ion Criss-Cross Practice

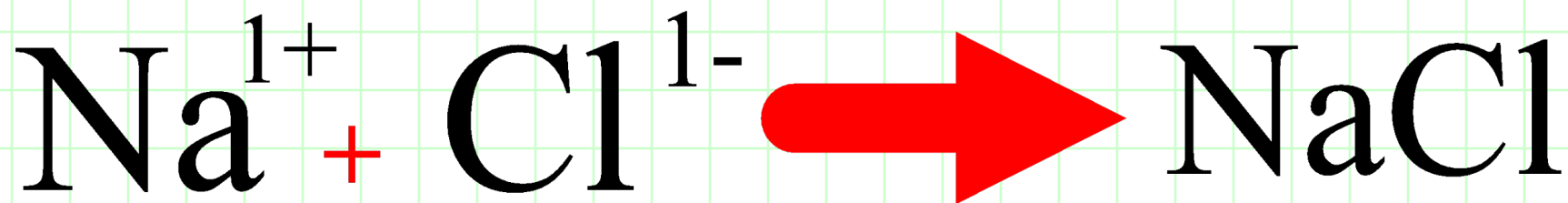


The Periodic Table and Bonding

D. Chemical Reactions result from bonded ions

1. **5 most common reactions**

a. **Synthesis Reaction**



+

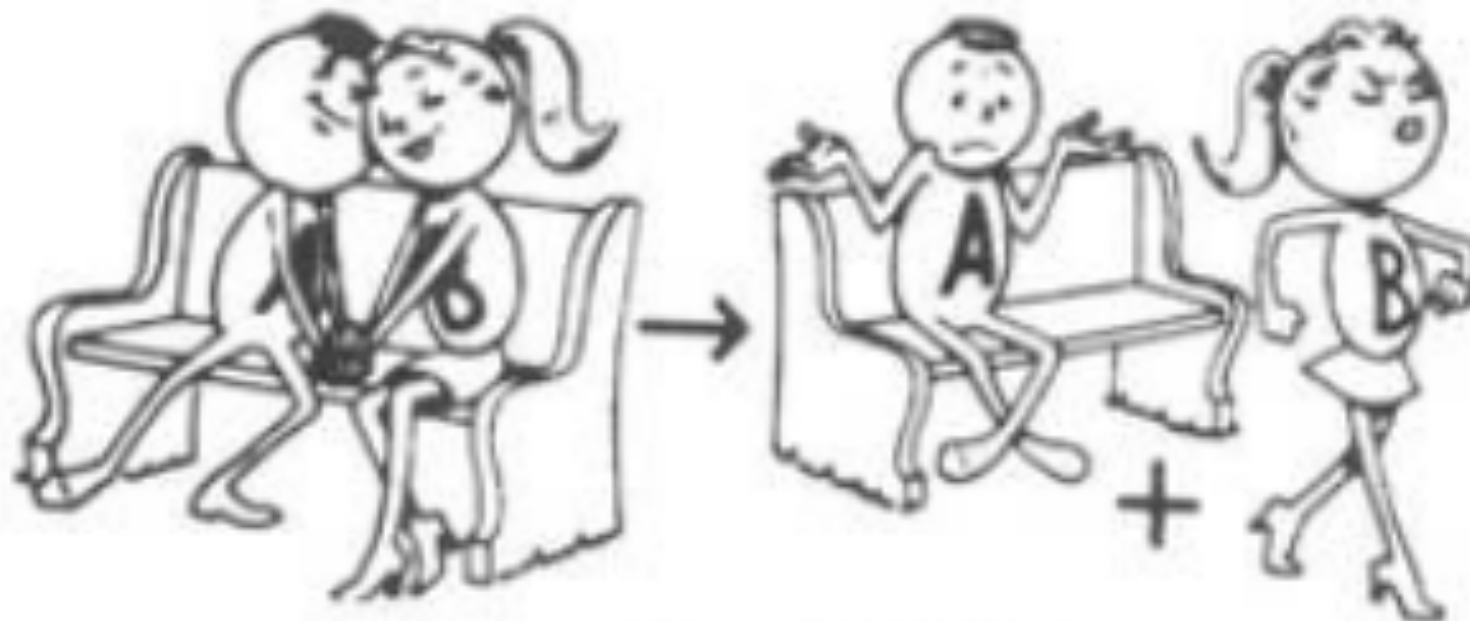
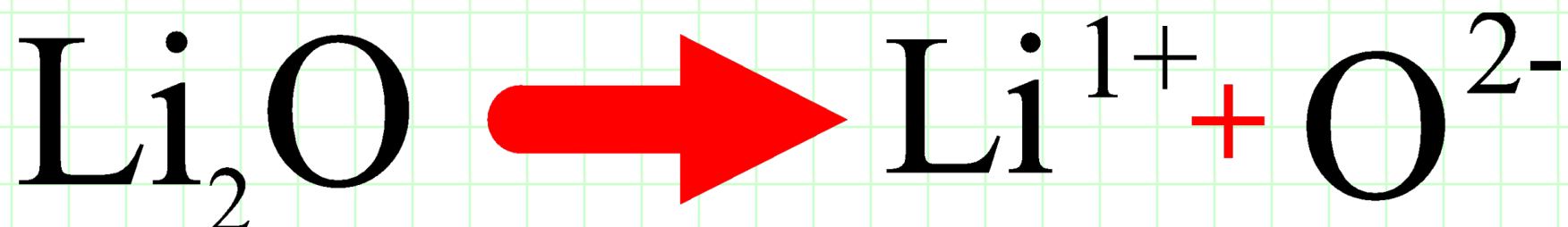


=



The Periodic Table and Bonding

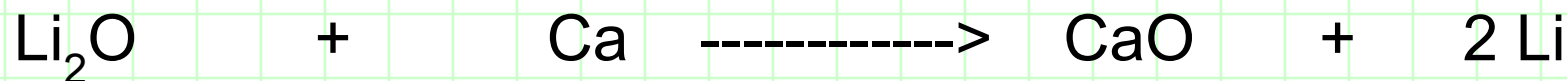
b. Decomposition Reaction



Decomposition.

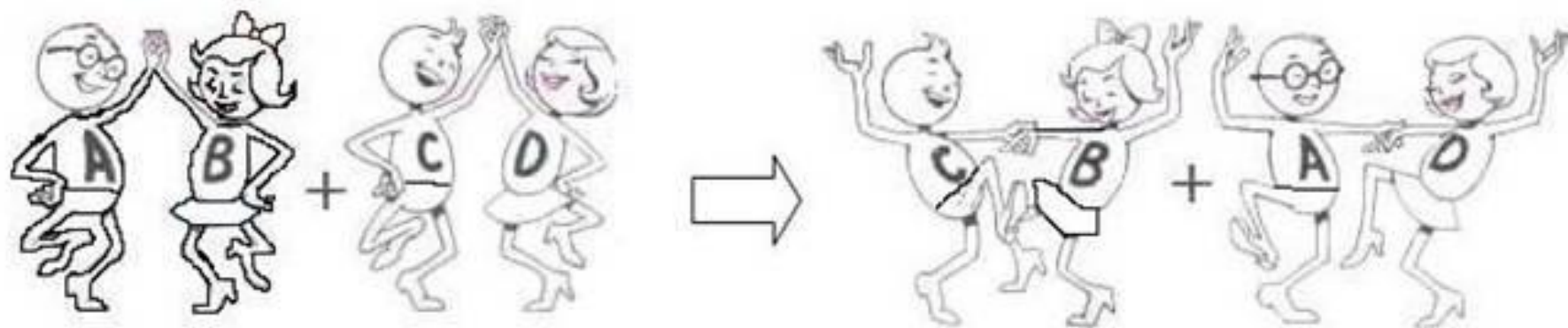
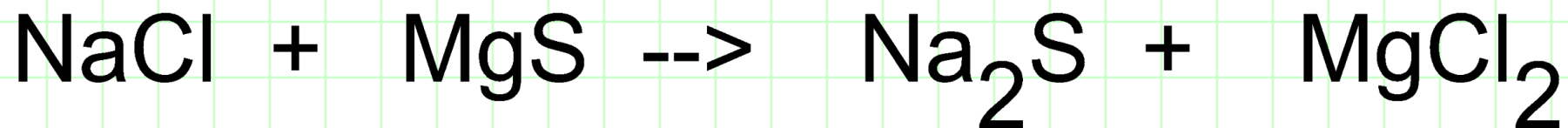
The Periodic Table and Bonding

c. Single - Replacement Reaction



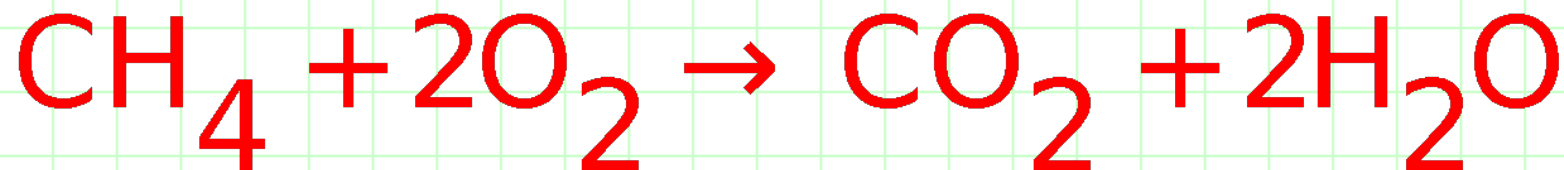
The Periodic Table and Bonding

d. Double - Replacement Reaction



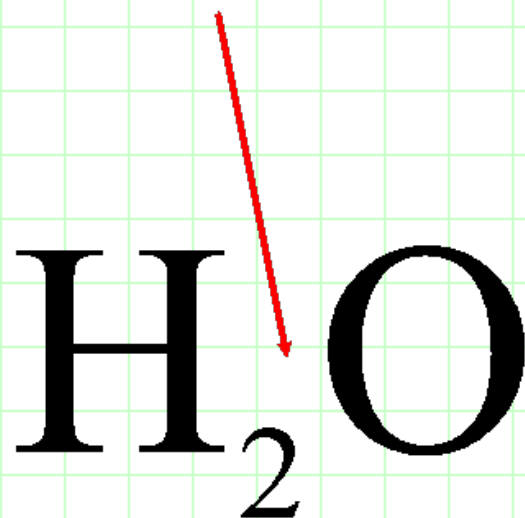
The Periodic Table and Bonding

e. Combustion Reaction



The Periodic Table and Bonding

B. Subscripts: shows the number of atoms of a particular element that it follows.

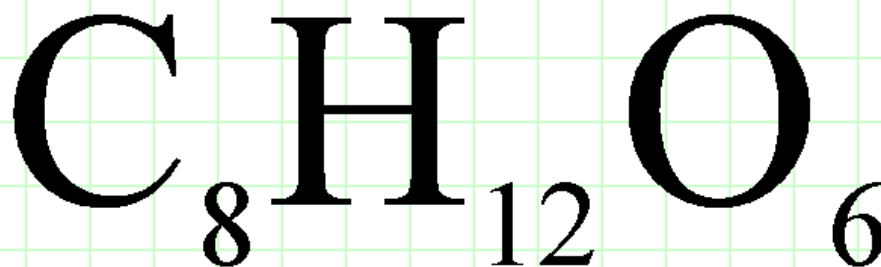


of H=

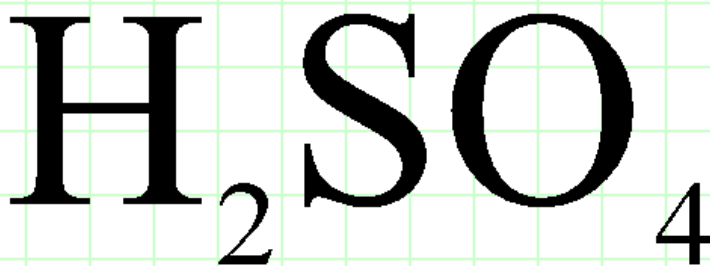
of O=

The Periodic Table and Bonding

Subscript Practice



of C=
of H=
of O=



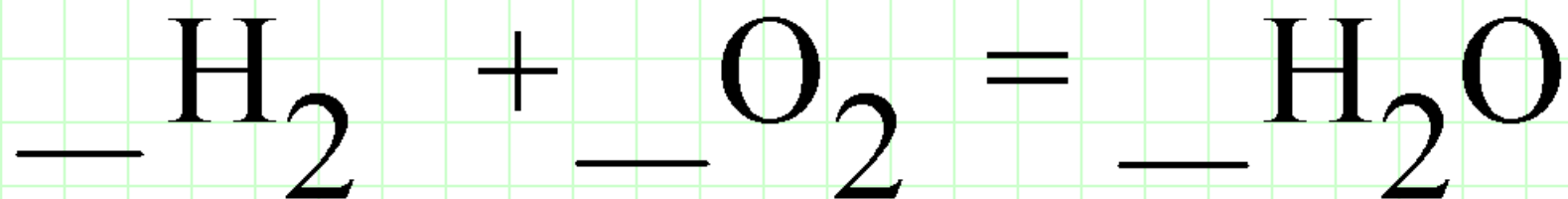
of H=
of S=
of O=



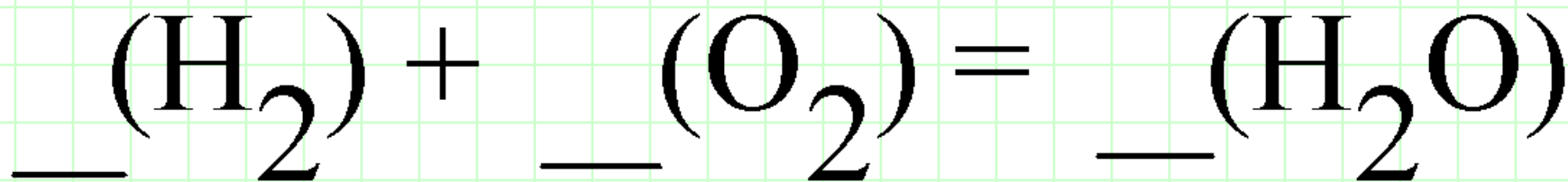
of C=
of H=

The Periodic Table and Bonding

BALANCING EQUATIONS



OR THINK OF IT THIS WAY!



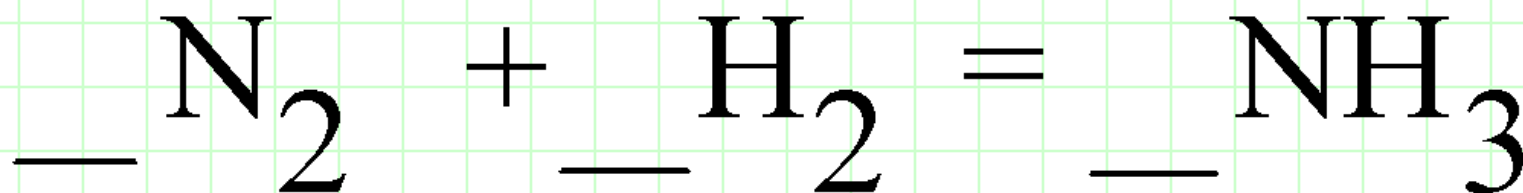
The Periodic Table and Bonding

Chemical Equations must be balanced due to the conservation of mass.

**MATTER CANNOT BE _____
or _____ only rearranged!!!**

The Periodic Table and Bonding

BALANCING EQUATIONS PRACTICE!



Reactants

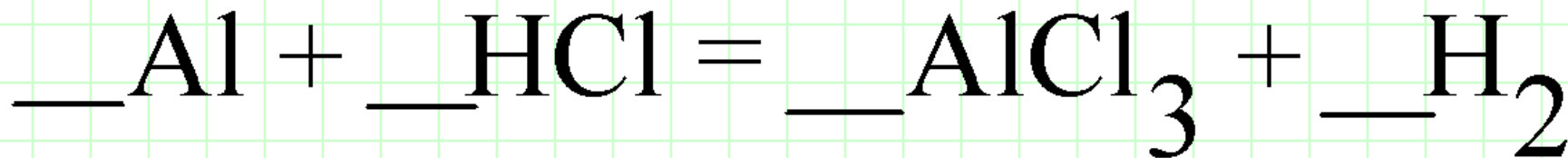
N =

H =

Products

N =

H =



Reactants

Al =

H =

Cl =

Products

Al =

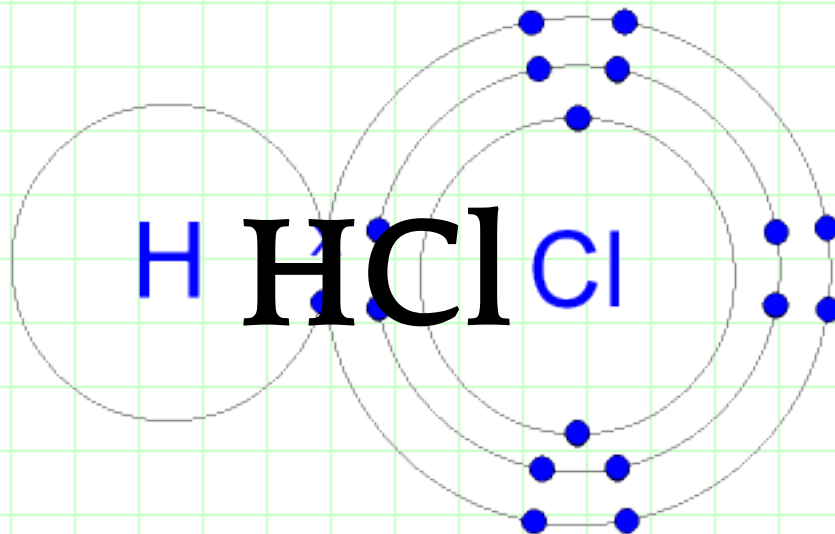
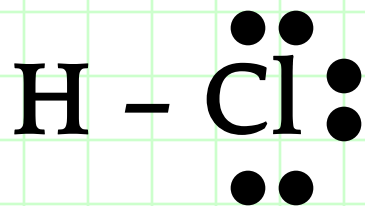
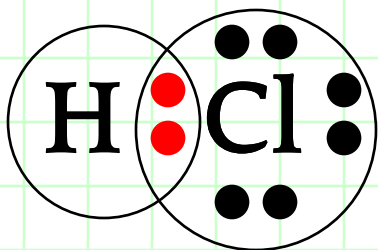
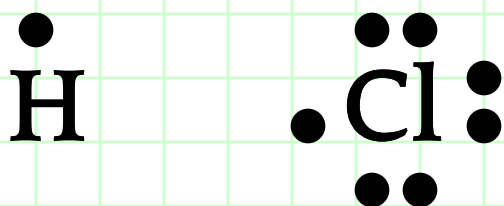
H =

Cl =

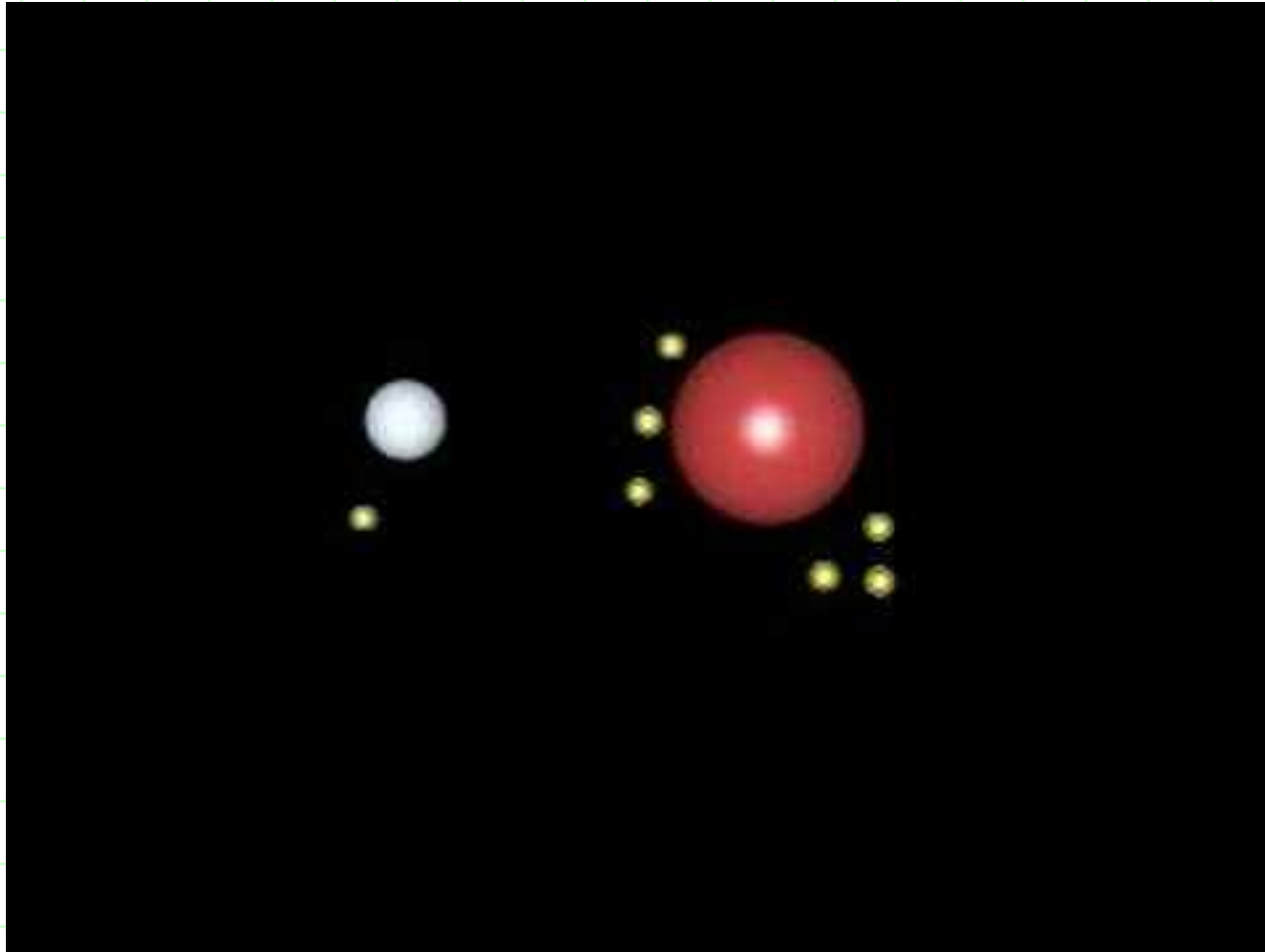
The Periodic Table and Bonding

E. Covalent Bonding : The bonding of a non – metal and non – metal

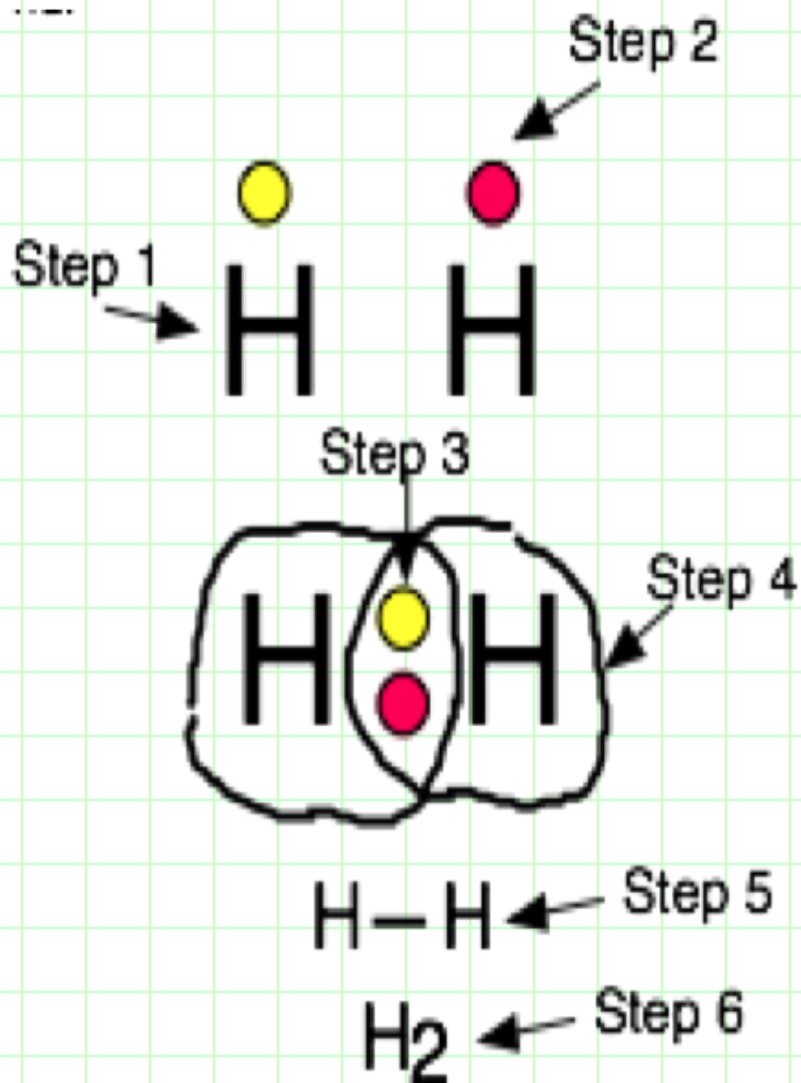
1. Atoms share valence electrons.



The Periodic Table and Bonding



The Periodic Table and Bonding

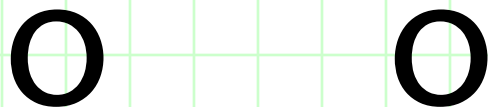


F F

The Periodic Table and Bonding

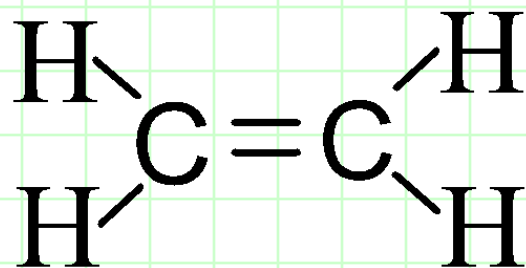
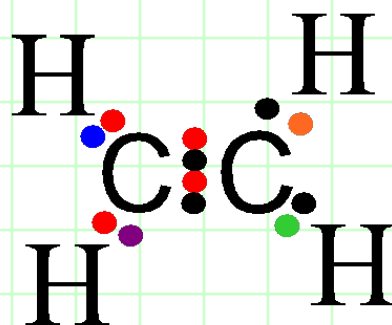
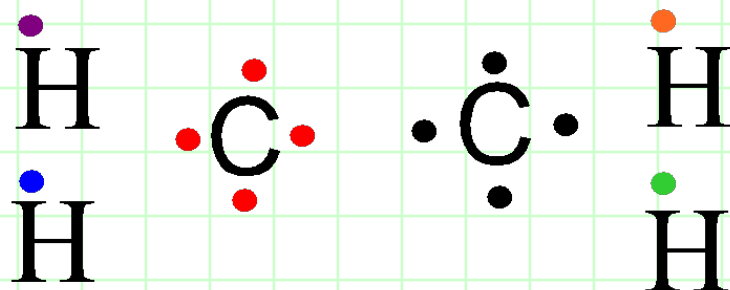


The Periodic Table and Bonding



The Periodic Table and Bonding

Double Bond



The Periodic Table and Bonding

N

N

The Periodic Table and Bonding

Tripple Bond

